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THE HOUSING OF SWINE

By W. F. STEVENS, Live Stock Commissioner.

The object of housing domestic animals is to protect them against unfavorable climatic conditions. The conditions that have to be considered in connection with swine growing in Alberta are rain and cold. In countries where there are sudden changes from one to the other of these, a style of housing is necessary that will afford protection against both. In Alberta this is not the case. Here rains are not followed by severe cold, and the season during which extreme cold occurs is free from rain.

Although it is possible to construct buildings here that will afford protection against both rain and cold, it naturally follows, because of the severity of our winter weather that these must be expensive. The settler who is not yet fully established and the amateur in the business, must, as a rule, endeavor to secure the largest possible equipment for the amount of money expended, and these will find that separate housing for the winter and summer months can be provided more cheaply than can a building suitable for use throughout the year. They will also find that a structure suitable for sleeping quarters during summer can be used as feeding quarters during the winter months and temporary sleeping quarters for winter use can, at a small cost, be attached thereto.

The purpose of this circular is to suggest to settlers of limited means a method whereby they can engage in swine growing even to the extent of marketing 100 hogs each year with an investment of less than one hundred dollars in buildings; and also to direct the attention of men of capital, who contemplate embarking in the business of swine growing, to certain features of housing made necessary by our climatic conditions.

THE FIRST REQUISITE

The first requisite for the successful and economical wintering of swine is an abundance of straw, preferably wheat straw. Oat straw may be used, but under no circumstances should barley or flax straw be employed in a nesting place for hogs. The reason

for this is that wheat straw is hard and fibrous; it therefore lies much looser than softer straws and the moisture from the breath of the animals escapes through it freely. When barley straw is used, besides the irritating effect of the awns to the skin, eyes, ears and nostrils of the animals nesting therein, trouble soon arises through the bedding becoming saturated with moisture, the animals getting steamy, and when they come in contact with the outside air, there is danger of their contracting rheumatism, pneumonia, or both. To an animal naturally inclined to burrowing, the difference between a bedding that lies loose and one that is compact may be likened to the difference between leather and rubber footwear. The one permits the exhalations of the body to escape, the other retains them, and their retention causes discomfort and injury to health.

The next requisite of a healthy sleeping place for swine in Alberta, where straw is relied on exclusively, is proper means of enabling the animals to get an entrance under this straw and bury themselves in it. In the bush country, there is no better method of doing this than by throwing a "setting" of wheat or oat straw over a tuft of strong willows, about 12 feet high. Where this cannot be done, a framework such as is shown in Fig. 1 may be employed, and a pile of straw thrown over it. The opening marked "X" should be near the outside of the pile so as to be easily found, and it should be so placed in relation to the prevailing winter winds as not to get filled with snow. With a structure such as this a dozen brood sows, or from forty to fifty "shoats" can be successfully wintered.

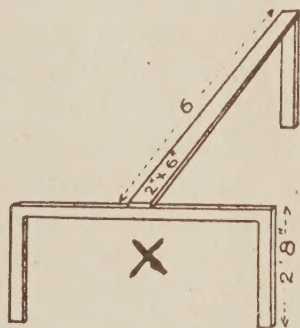


Fig. 1—Truss for entrance to straw pile.

THE POOR MAN'S PIG STY

In those parts of the province that are not subject to long continued rains such a structure will suffice throughout the year because the ridge pole will keep the centre of the pile from sagging; and since nearly all the settling must take place at the sides, a straw pile arranged as suggested above will turn any rains that are likely to occur where the annual rainfall is not more than 16 inches.

When providing hogs with winter quarters such as are suggested above, care should be taken to exclude all other live stock from them.

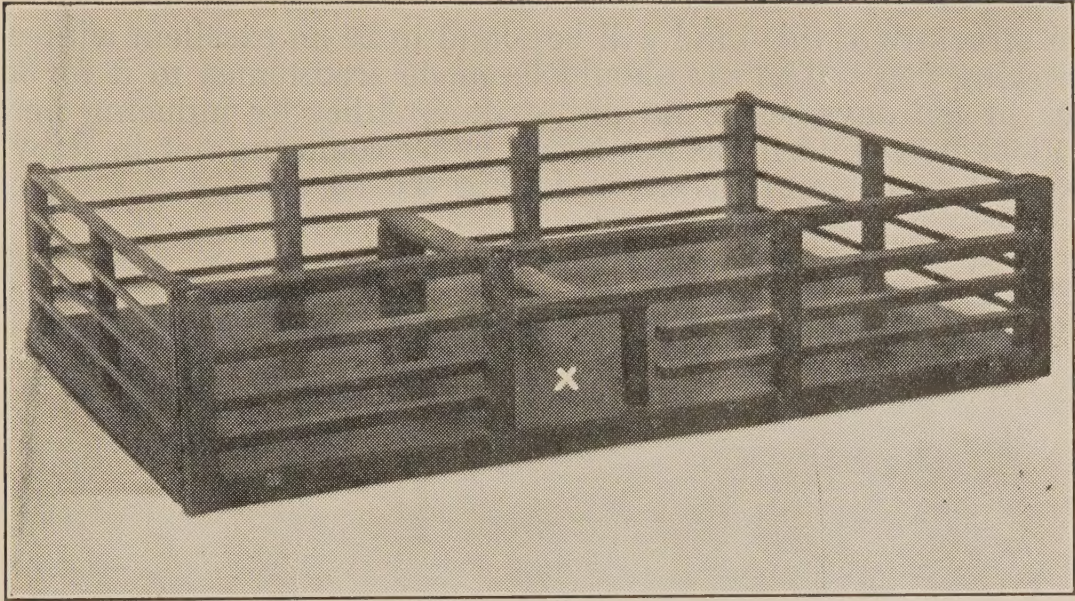


Fig. 2—Illustrating how truss may be placed in the enclosure.



Fig 3—Showing enclosure filled with straw.

Figs. 2 and 3 show the same principle carried a step further by enclosing the pile of straw with a substantial fence, and they may properly be termed the "Poor Man's Pig Sty." It may be built to any size desired, but it should never be built so small as to cause the straw to wedge in between the ridge pole and the fence, and thus prevent it from settling as it is required. An enclosure 14 feet square might be found satisfactory in those parts of the province where the straw is short, but where straw attains a length of four feet or more, a 16 feet enclosure will be necessary. Such a pen will accommodate a brood sow and litter of pigs, from 15 to 20 weanling pigs, or from 6 to 8 fat pigs.

A WINTER FARROWING PEN

A structure of this kind will be found to be an excellent winter farrowing pen. The sow should be made accustomed to it for a week or ten days before farrowing time, either by inducing her to adopt it voluntarily as her home, or by confining her in it by means of an enclosure as shown in Fig. 4.

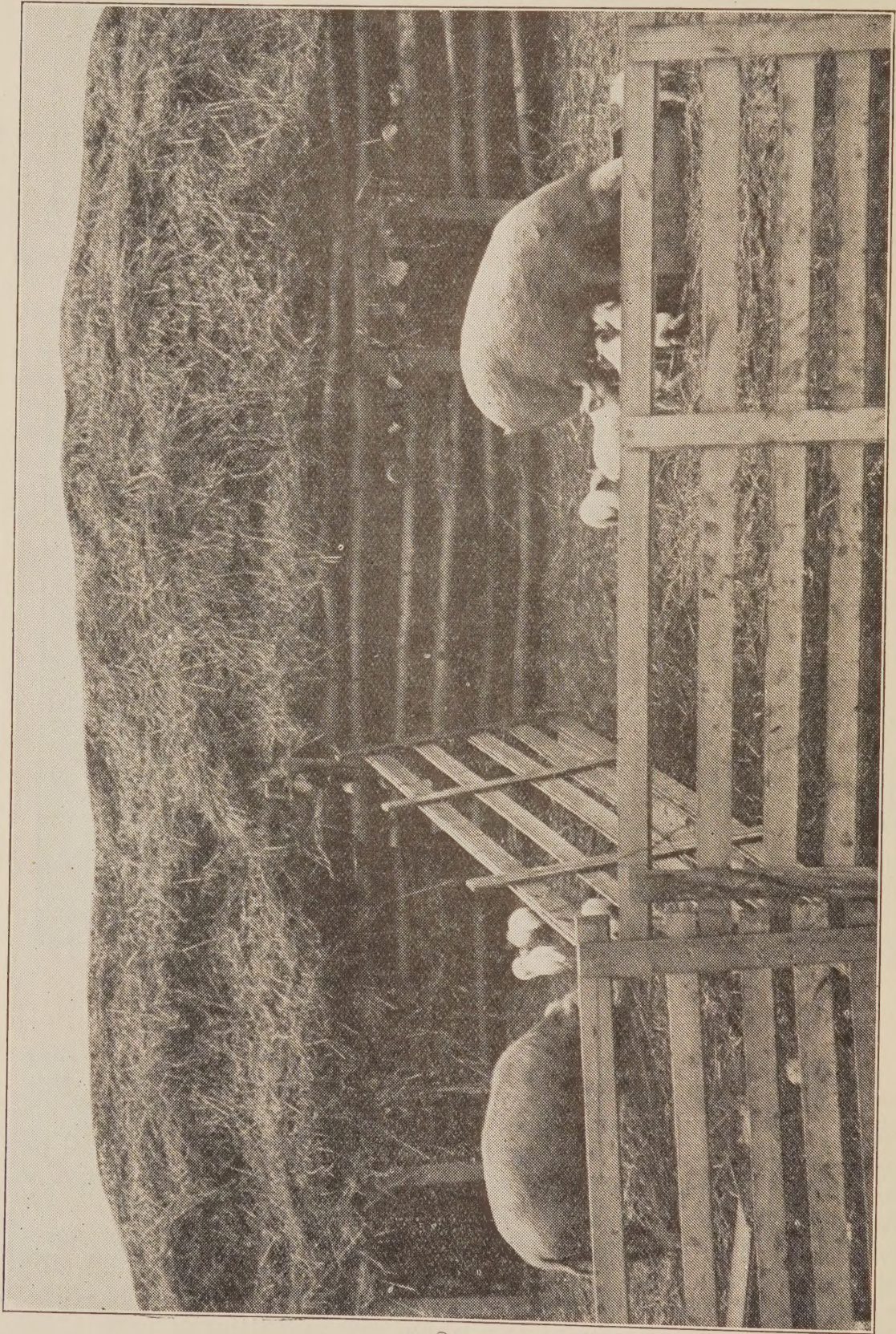


Fig. 4—A successful winter farrowing pen in use in Alberta.

When this last method is adopted, she should be supplied with a warm thin slop of ground oats, or oats and bran, every morning and evening, and a few whole oats should be thrown broadcast on the ground in the enclosure in front in order to induce her to take sufficient exercise to keep her in health. Two or three pounds of roots daily will also have a beneficial effect.

A number of structures and enclosures such as are shown in Fig. 4 may be built adjoining each other, and the cost of each will thus be very much reduced. The illustration shown in Fig. 4 was taken on the farm of Mr. Wm. Moodie, eight miles east of De Winton, Alta. The sow in the pen on the right farrowed seven pigs, the one on the left farrowed eight; both saved 100 per cent. of their litters.

When structures of this kind are built in the prairie districts, care must be exercised to so place them that the enclosures at the front will not become filled with snow.

FEEDING QUARTERS

As the settler becomes better established he will find it to his advantage to provide better feeding quarters than have thus far been shown. The kind of building he will erect will be determined largely by the amount of money he has to put into it and the extent to which he intends to go into the business.

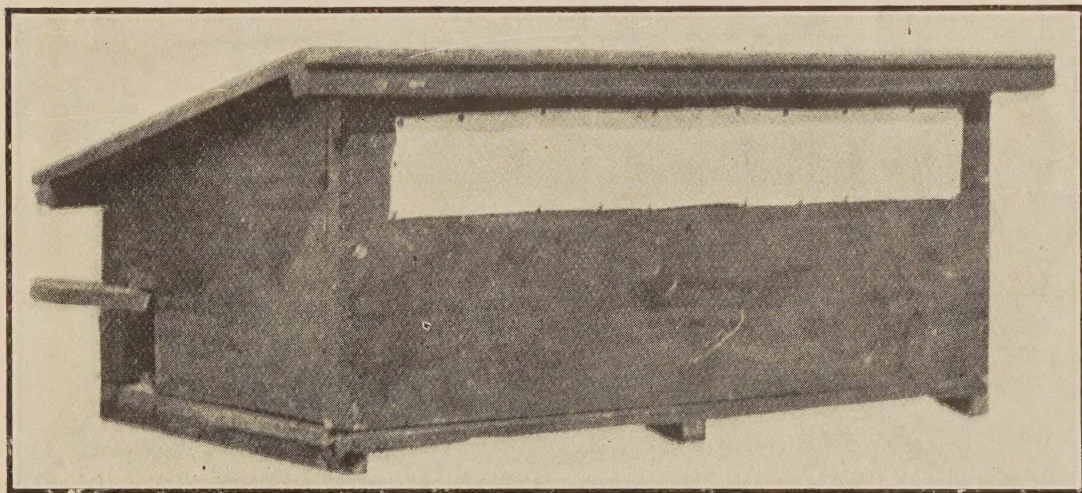


Fig. 5—Feeding quarters, showing cotton covered opening.

For the farmer of limited means, a building such as is shown in Fig. 5, can be constructed at a price within his reach and can be so adjusted as to meet all requirements. It may be made to any length desired. It should be at least 16 feet wide and 6 feet high at the eave. A single course of lumber, logs, slabs or baled straw will suffice for the walls. Care should be exercised to make the roof waterproof. The building should face the south and an opening 2 feet wide, extending the length of the building, and six feet from the ground, should be made on the south side, as shown in Fig. 5.

This opening should be covered with cotton or burlap, which will admit sufficient light, provide good ventilation and prevent a draught. The interior arrangement should provide a feeding passage the full length of the south wall. A door or gate 2 feet

wide leading from this passage to the pens should be installed at intervals of from 12 to 18 feet. These will be found to be very convenient when changing hogs from one pen to another; and when marketing, a wagon can be backed up to the doorway, the required number of animals driven into the feeding passage, and from there through a loading chute into the wagon.

The main body of the house should be supplied with movable partitions for use at farrowing time. Each sow should be supplied with an individual pen not less than 6 feet, and better still 8 feet, wide. In the rear of each pen there should be a small run-way of equal width as the pen, and from 20 feet to 24 feet long.

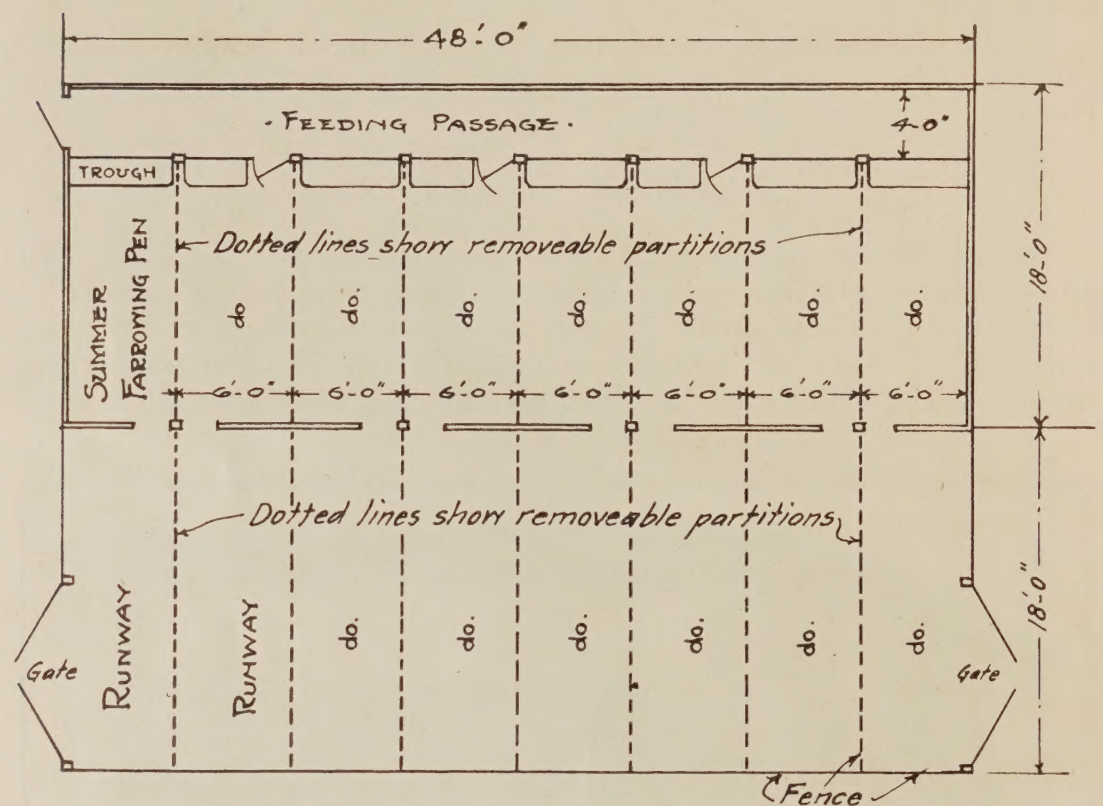


Fig. 6—Floor plan for large feeding pen.

Fig. 6 shows the floor arrangement of such a structure, 48 feet long. It provides farrowing pens for eight brood sows at one time. It will be observed that these pens are separated from one another by removable partitions, thus making it possible to transform the floor space into one or two large pens for housing and feeding a number of hogs that are being fitted for market.

It should also be noted that in the rear of the building provision is made for a small run-way to connect with each farrowing pen. These run-ways are also separated from one another by removable partitions, by means of which this space may be transformed into one or two larger run-ways. These larger run-ways may be used in the autumn as places in which to build a pile of straw, which in turn can be utilized as sleeping quarters by the pigs during the winter months.

Fig 7 shows such an arrangement of feeding and sleeping quarters for winter use. One or more trusses as shown in Fig. 1 should be so placed as to facilitate the entrance of the pigs into the straw pile.



Fig. 7—Arrangement for feeding and sleeping quarters for winter use.

SUBSTANTIAL BUILDINGS

Many swine growers prefer a more substantial building than that shown in Fig. 5. They want something that is at once proof against both rain and cold, is lighted by means of glass and has ample provision for ventilation without a draught. Such a building, if built of boards, must necessarily consist of at least two course of lumber with one of tar paper between.

VENTILATION

Instead of covering the ceiling with lumber, strips or poles placed about three inches apart, over which a layer of straw about 18 inches thick is placed, will suffice.

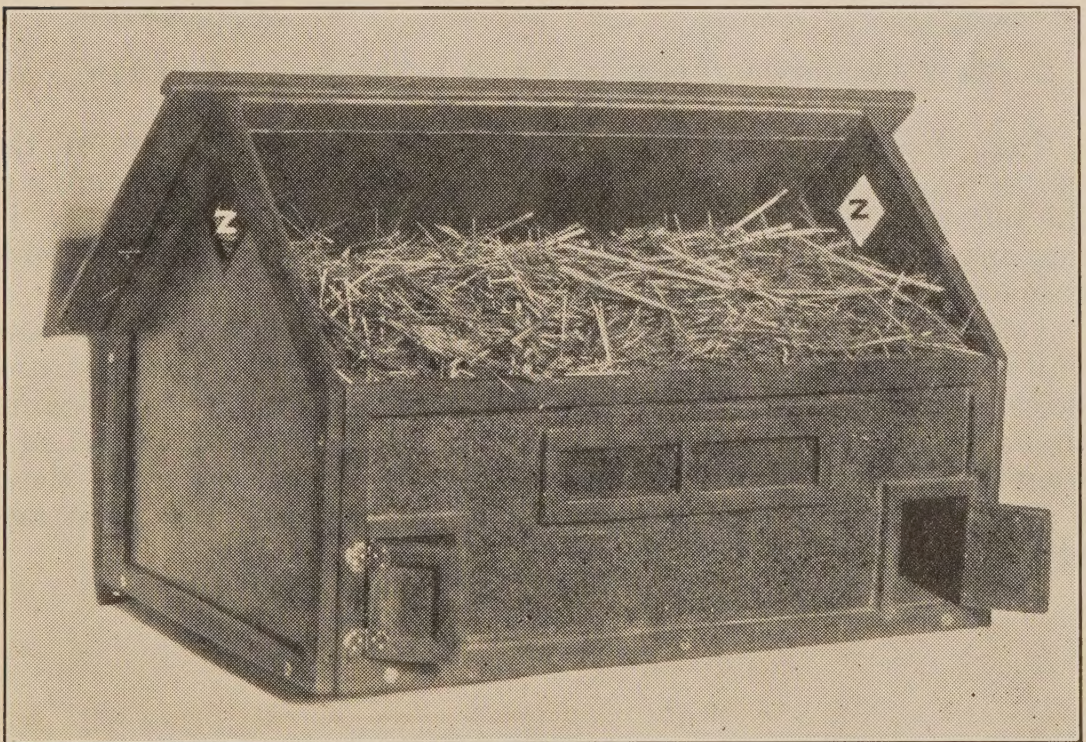


Fig. 8—Showing method of ventilation through a layer of straw.

Fig. 8 shows a two pen hog house of this type. It is important that an opening 2 feet square be left in each gable, as shown, and marked Z, in order that the wind can circulate freely over the straw and thus carry off the moisture which it absorbs from the air passing through it from below. In those parts of the province where there is trouble from snow drifting into openings of this kind, that facing the prevailing winds will have to be protected or closed during stormy weather.

HOUSES OF BALED STRAW

From the prairie districts, particularly from points remote from a railway station, there have come numerous requests for suggestions and information regarding the building of hog houses with baled straw. Such a building is entirely practicable, but care must be taken to protect the bales against water both from above and below. Flax straw is to be preferred to all others. The bales should be tied with three strands of wire in order to keep the ends as square as possible, and thus facilitate the securing of tight joints. The lower course of bales should not be placed on the ground, but on a platform about 4 inches narrower than the bale and at least 6 inches above the floor of the pen.

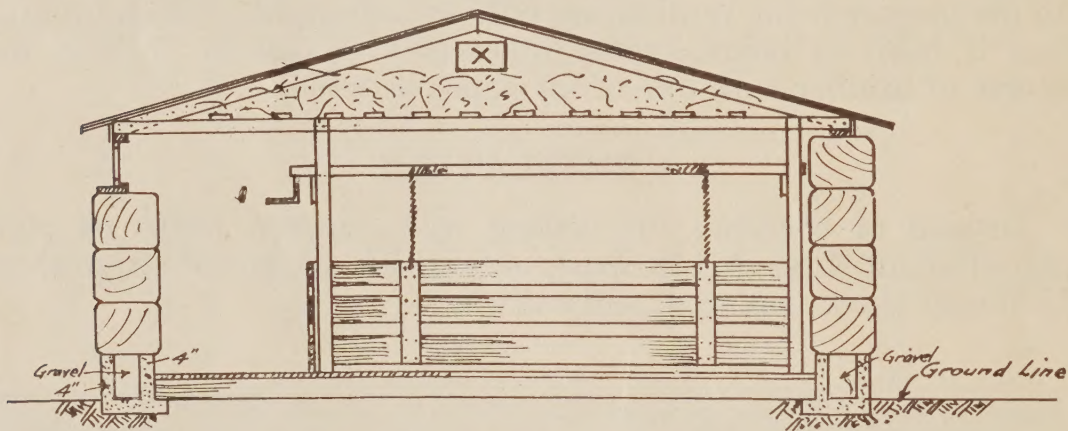
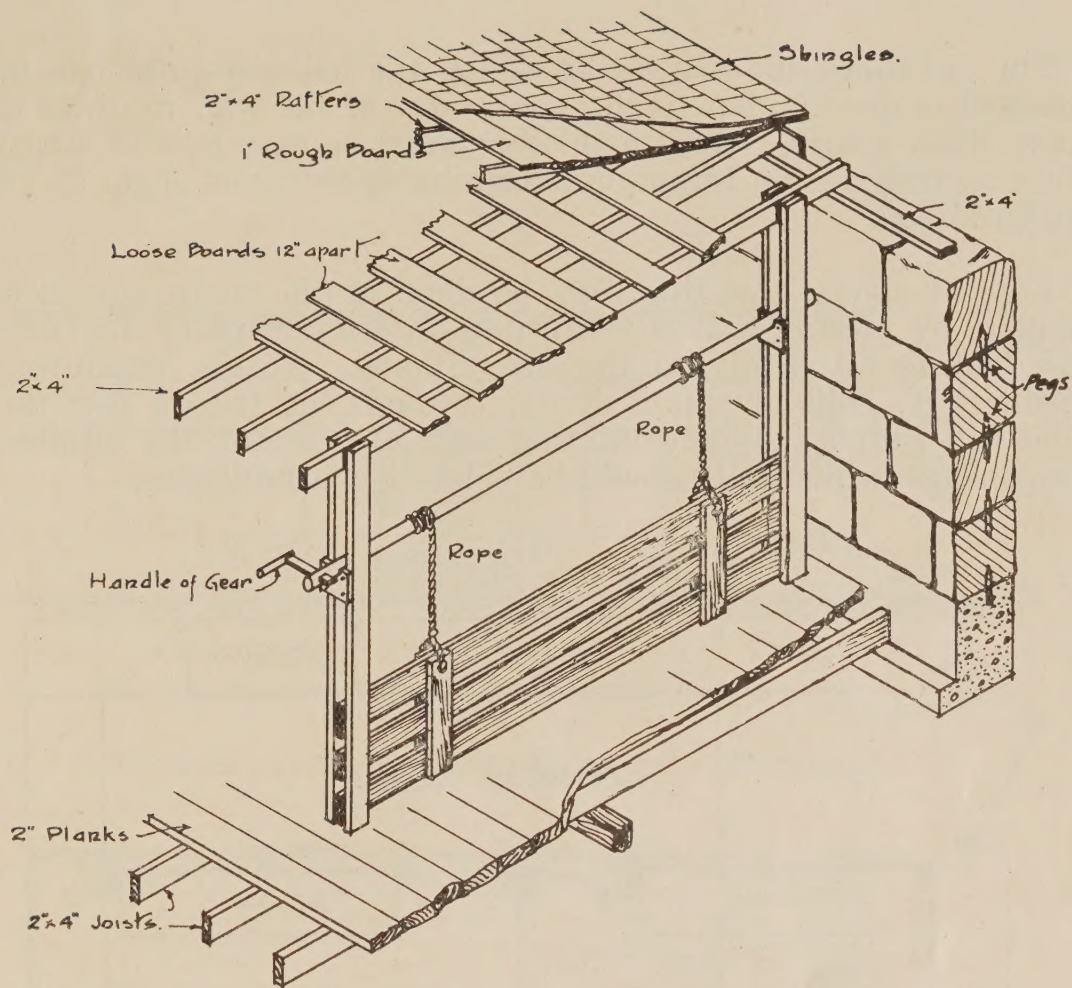


Fig. 9—Arrangement of ground work for house of baled straw.

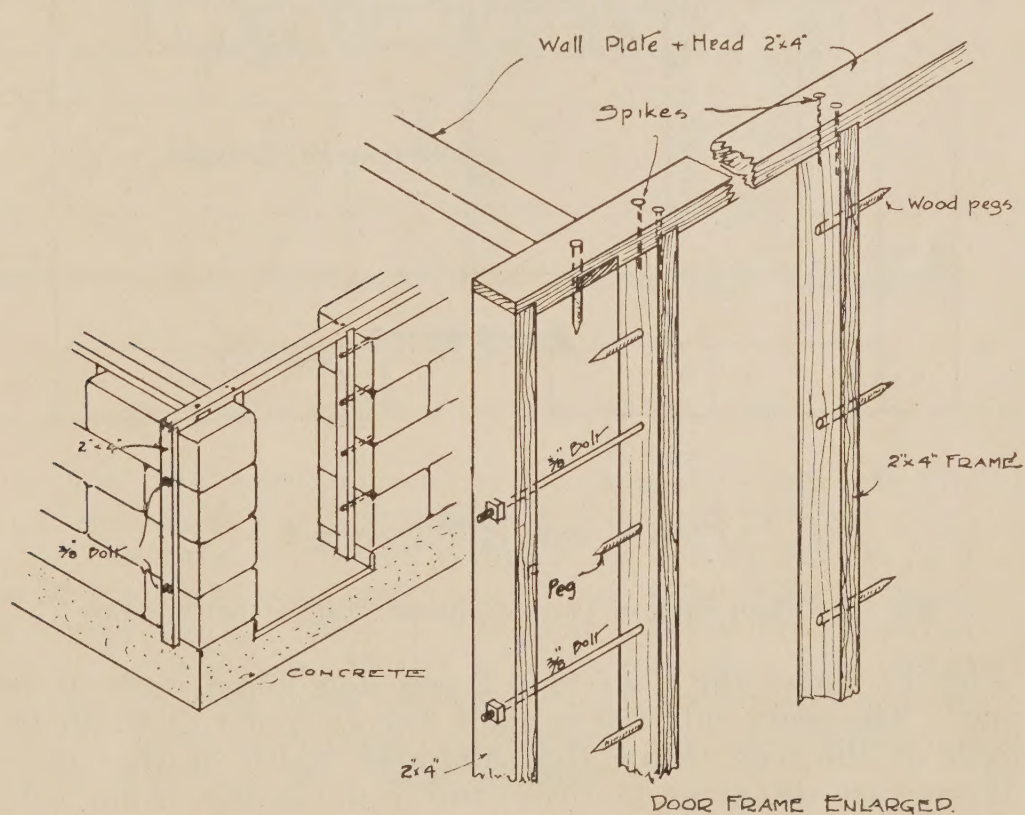
Fig. 9 shows, among other things, the arrangement of the ground work of such a wall. The illustration specifies concrete as the material to be used, but brick, logs, plank or sawed timber, in fact anything may be employed that will insure a firm and durable base upon which the superstructure may be placed.

Care must be exercised when constructing the walls of any building with baled straw to so secure the bales that they cannot be easily jarred out of place by animals running or kicking against them, or by careless teamsters striking them with the wheel of a wagon. This end can be accomplished by means of pegs about 6 inches long and extending half their length into the lower and upper bales.



ISOMETRIC SKETCH OF WINDING GEAR

Fig. 10—Method of attaching one bale to another by means of pins.



ISOMETRIC SKETCH OF DOOR FRAME.

Fig. 11—Method of attaching bales of straw to framework.

Fig. 10 shows the manner in which the bales of straw can be attached to one another in the main body of the wall in order to make them secure. Additional care must be exercised to attach them securely to the framework forming the various openings of the buildings.

Fig. 11 shows how this may be done at the main entrance, namely, by placing a 2"x4" scantling on the outside of the bales and bolting all firmly to the door frame. At the remaining openings 8" bolts or spikes driven through the frames into the bales will suffice. When building such a structure, the number of openings in the walls should be reduced to a minimum.

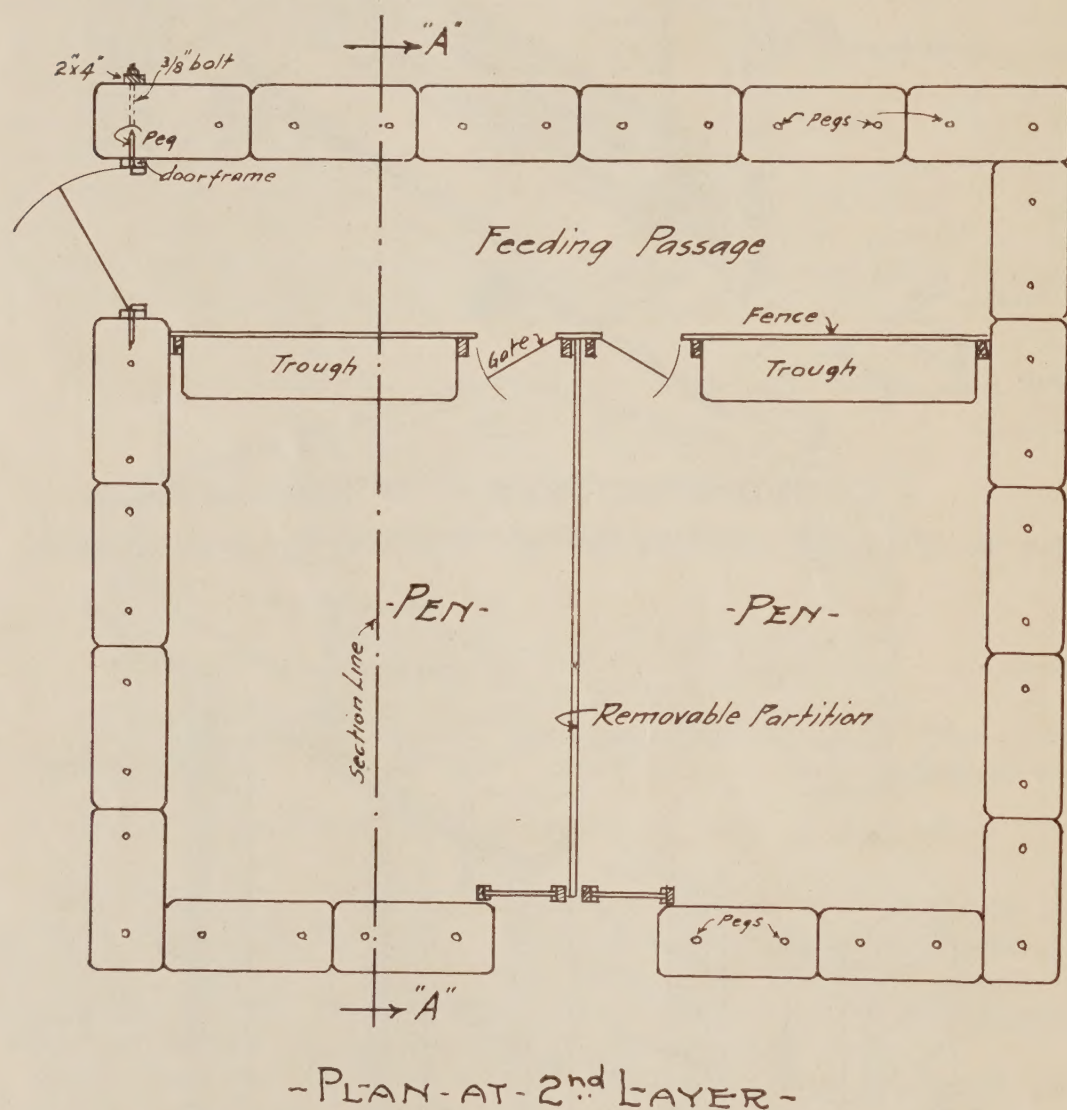
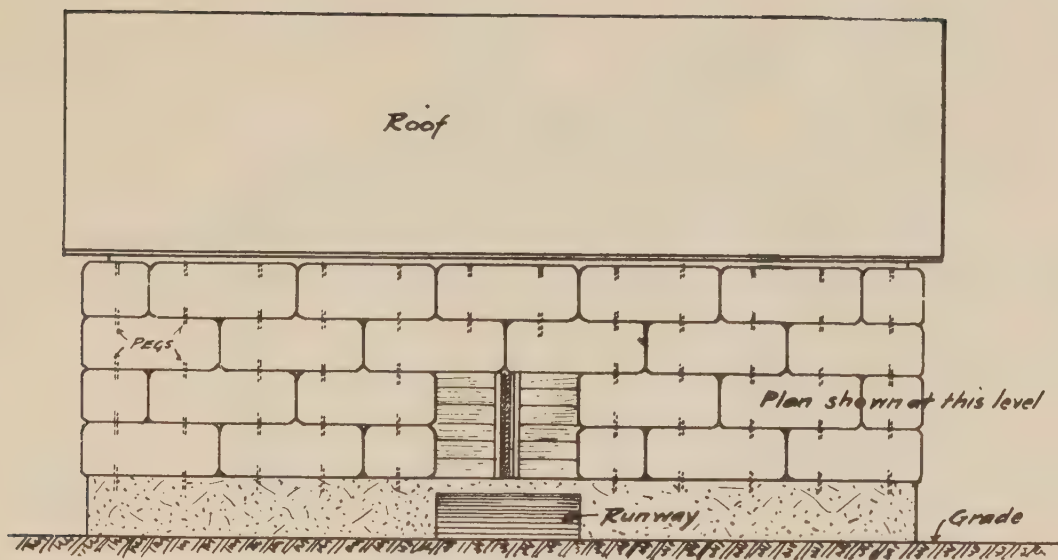


Fig. 12—Floor plan of two pen house built of baled straw.

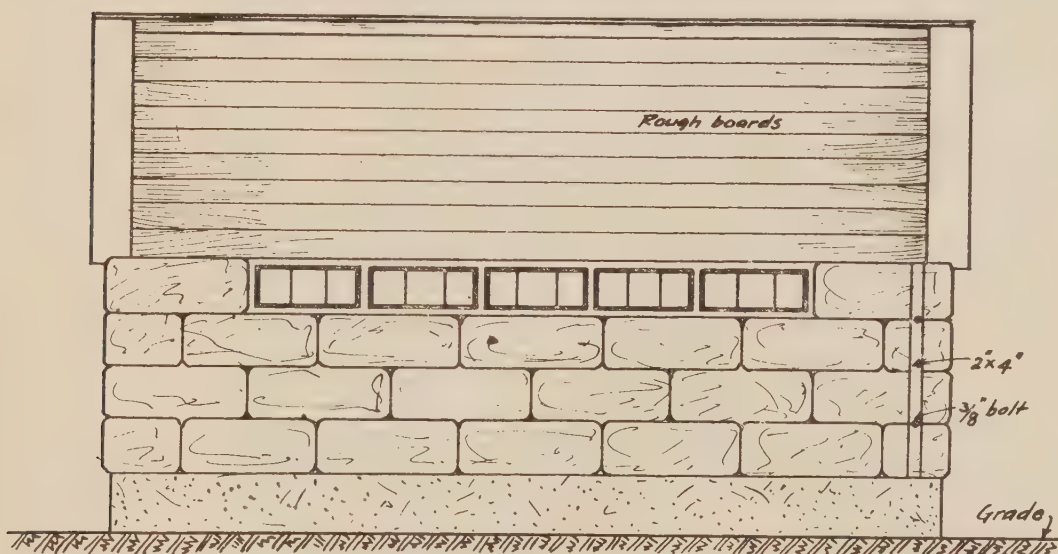
Fig. 12 shows the floor of a 2-pen hog house built of baled straw. The main entrance is made to correspond in width to the length of the bale, while the combined width of the two rear entrances are also made to correspond to the length of one bale.



-REAR ELEVATION-

Fig. 13—Rear elevation of baled straw hog house.

Fig. 13 shows the rear elevation of the same structure.



-FRONT ELEVATION-

Fig 14.—Front elevation of baled straw hog house.

Fig. 14 shows the front elevation of the same building. It will be observed that in this building light is admitted through glass. The size of the window frames is made to correspond to the thickness of the bales. In order to prevent water from running off the windows into the bales, it is necessary to use a wide plank extending to the outer edge of the bales, as a window sill. That portion of the building above the ceiling need not consist of more than a single course of lumber, and hence can be constructed more cheaply of lumber than bales of straw.

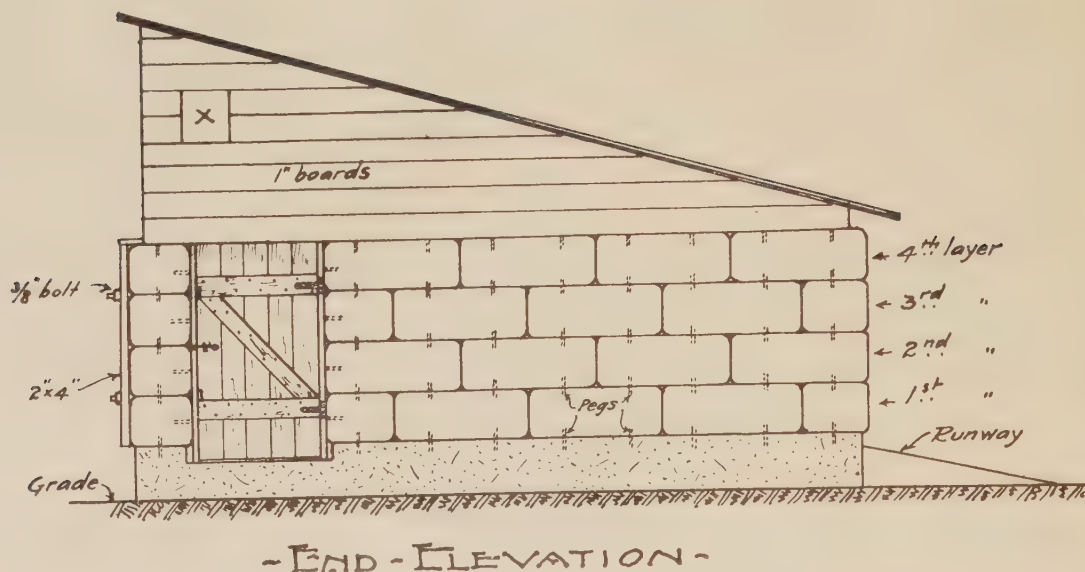


Fig. 15—End elevation of baled straw hog house.

Fig. 15 shows the end elevation. Attention is directed to the manner in which the bales are held firmly to the door frame; also to the opening marked "X" for supplying proper ventilation.

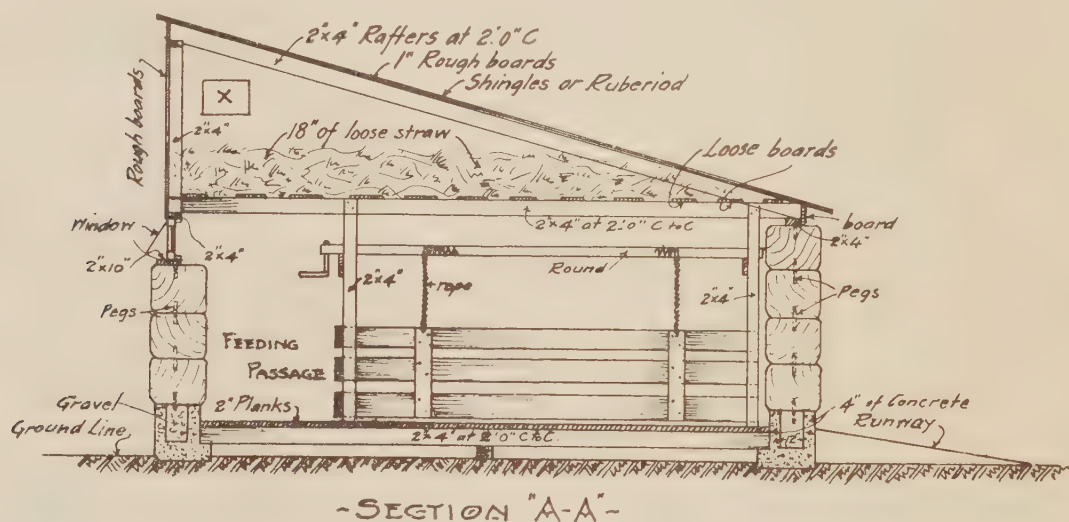
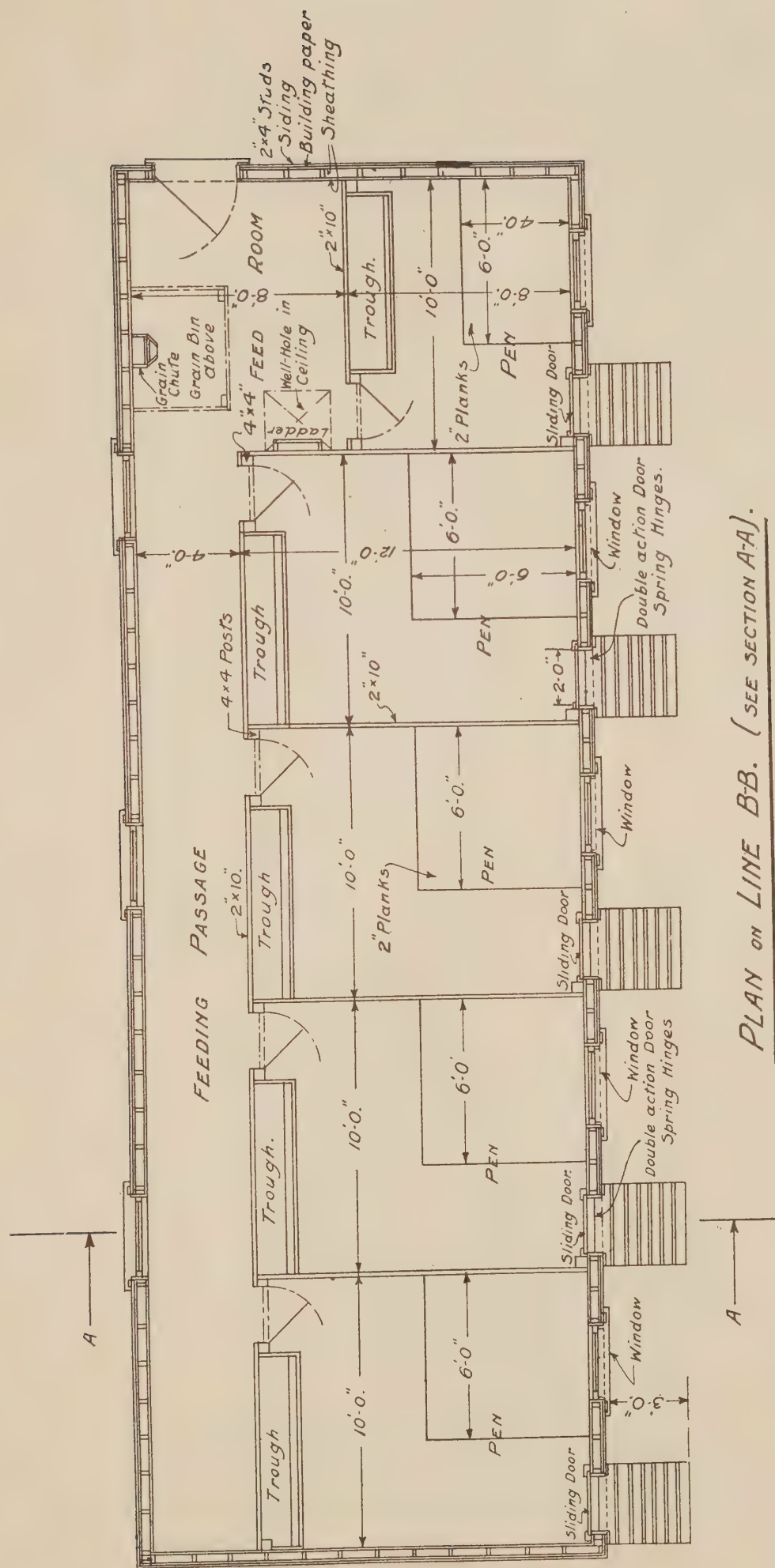


Fig. 16—Cross section of baled straw hog house.

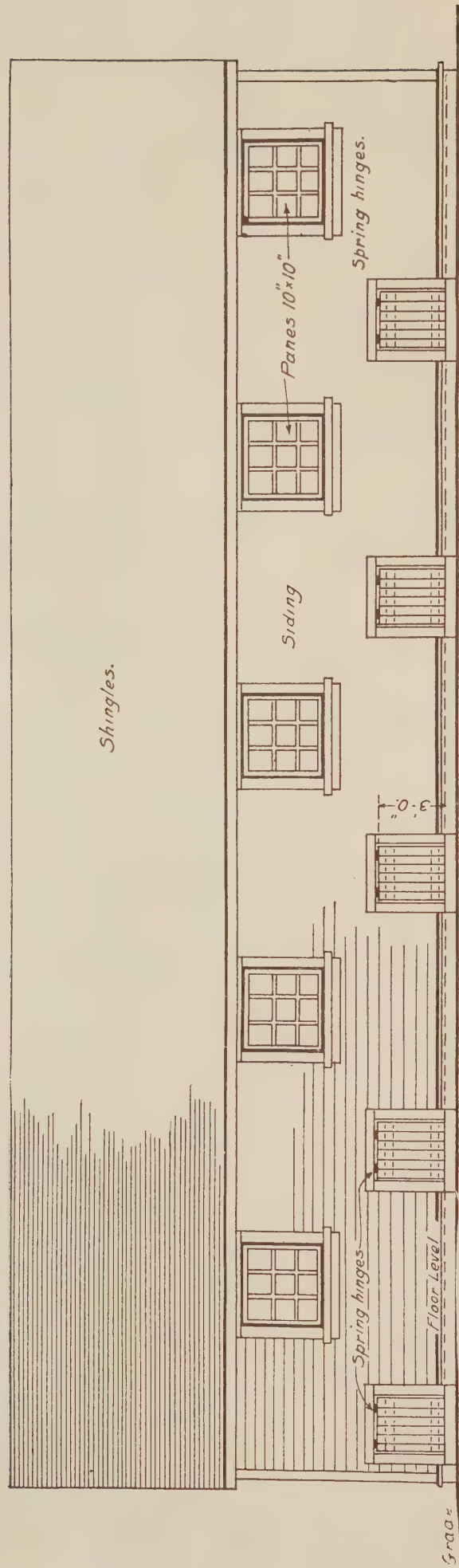
Fig. 16 shows a cross section of the same structure. In this figure attention is directed to the provision for ventilating through straw in the ceiling; also to the provision for raising and lowering a movable partition. Partitions of this sort are being successfully used on the farm of Major John Emslie of Belvedere, and are a great convenience.

Many swine growers object to the high front elevation that is required by a building having a one-slope roof. This objection may be overcome by the use of the gable roof as shown in Fig. 9. It should be noted, however, that the projection of such a roof interferes somewhat with the admission of light into the building.



PLAN ON LINE B-B. (SEE SECTION A-A).

Fig. 17—Floor plan of piggeries on the Alberta Government Demonstration Farms.



SOUTH ELEVATION.

Fig. 18—South elevation of piggeries on Alberta Government Demonstration Farms.

DEMONSTRATION FARM PIGGERIES

Figs. 17 and 18 show the floor plan and south elevation of the piggeries in use on the Alberta Government Demonstration Farms. These consist of a single row of pens. Each pen has an opening into the feeding passage. The floors are made of concrete. The nesting places are raised about four inches above the concrete and are built of plank. Ventilation is supplied through a layer of straw in the ceiling.

A feature of these piggeries that is worthy of notice is the arrangement of the doors on the south side. They swing from the top and are hung with spring hinges. Immediately on the inside of these swinging doors there is another door that slides up and down and that is raised and lowered by means of a line extending through a pulley to the feeding passage. When it is desired to confine the pigs in the piggery, particularly during cold weather, both doors are closed. In case a brood sow has a litter of small pigs following her, it is necessary to keep both doors closed or open, because if the inner door be open, the sow in passing through the doorway raises the swinging door, and this, falling from her back after she has passed through, is likely to strike the young pigs following behind when it comes back into position, and kill or cripple them. When pigs of the same size are running together in a paddock and nesting in the piggery, the value of this style of door becomes apparent. It contributes greatly to the warmth of the piggery during extremely cold weather.

THE COLONY PEN

The "A" shaped colony pen is used by many swine growers. It is usually built on runners so that it can be readily removed from one paddock to another. These runners should be of tamarac or some other durable material, and they should be of sufficient width and thickness to insure strength, usually 4"x4" will suffice, and cut to the length of the building. If the building is to be used as a farrowing pen, the platform should be at least 8 feet long and 6 feet wide, and the distance from the floor to the apex of the roof should be at least 6 feet; many swine growers make it 8 feet. This arrangement forms a structure which consists of a floor, roof and gables, but no walls. A suitable opening is provided in one gable for use as a doorway. Some swine growers take a pair of runners 10 feet or 12 feet long and place them 8 feet apart, fixing them firmly by means of scantling and braces across the corners. On these is built the roof and gables with an opening for a doorway. No floor is provided. This building is used as sleeping quarters during the summer and early autumn months by weanling pigs, or pigs that are being fitted for market.

THE BREEDERS' SWINE PALACE

Breeders of pure-bred swine usually find it advisable to adopt a system of housing that will enable them to show their animals to the best possible advantage to visitors and intending purchasers. It is necessary that such a building be compact, convenient for feeding and cleaning, well ventilated and lighted and free from

offensive odors. For the benefit of such, the following plan is suggested, and the building represented thereby may properly be termed "The Breeders' Swine Palace."

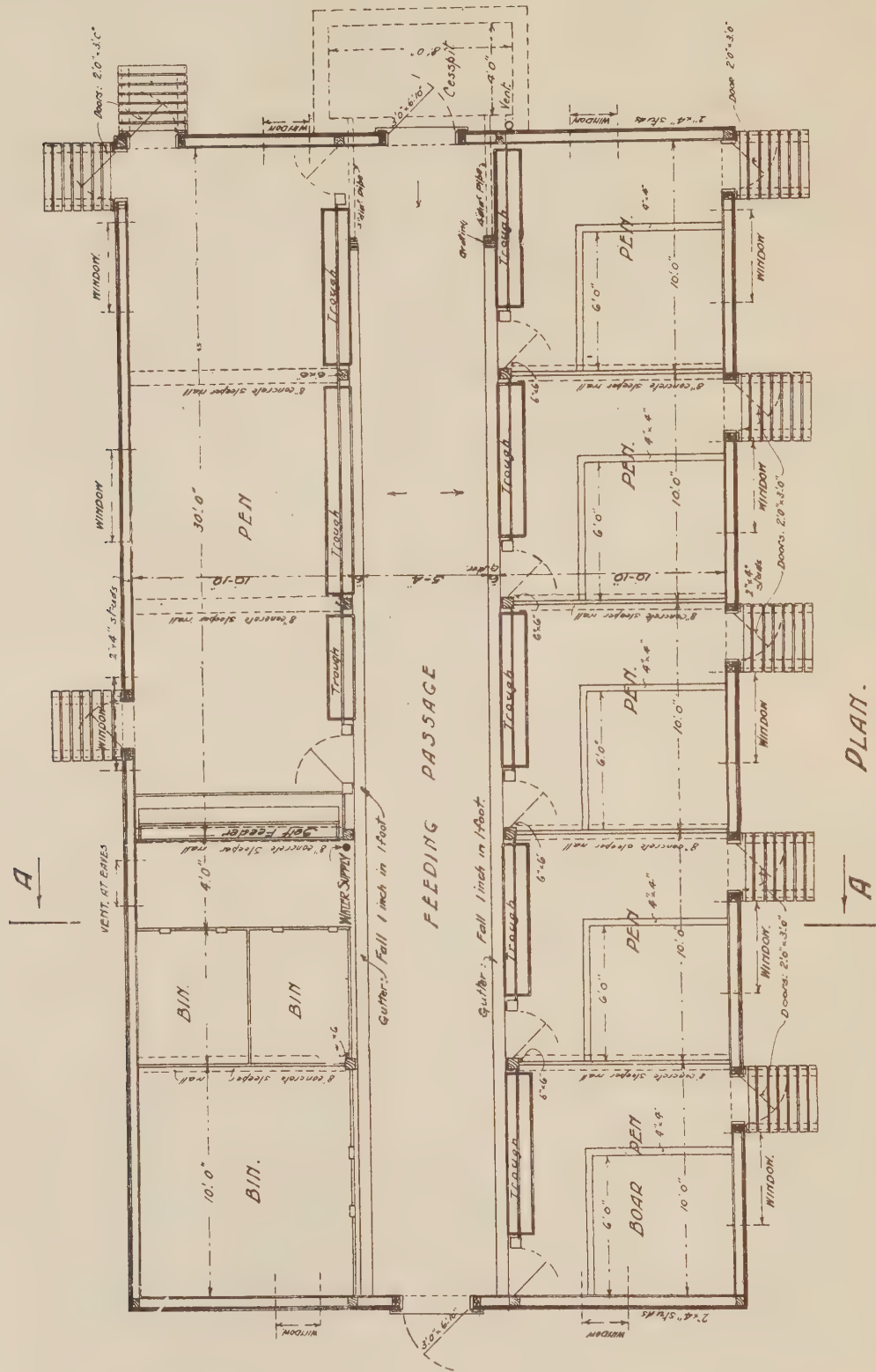


Fig. 19—The breeder's swine palace.

Fig. 19 shows the ground plan of such a building. It will be observed that there are two rows of pens with a wide feeding passage between them. On the south side of the feeding passage provision is made for 5 individual pens with stationary partitions between them. On the north side provision is made for adjusting

the space to the needs of the day. By means of removable partitions three extra farrowing pens can be supplied to meet an emergency, or the entire space can be thrown into one space in order to admit a number of fattening hogs to the self feeder which is placed convenient to the feed bin. Provision for a water supply is also made inside the building.

The main entrance to the building should be placed at the end opposite to the cesspit. It should open into a clean yard or court from which other stock is excluded and through which visitors can pass without coming in contact with the filth that is usually found in the stable yard or hog lot.

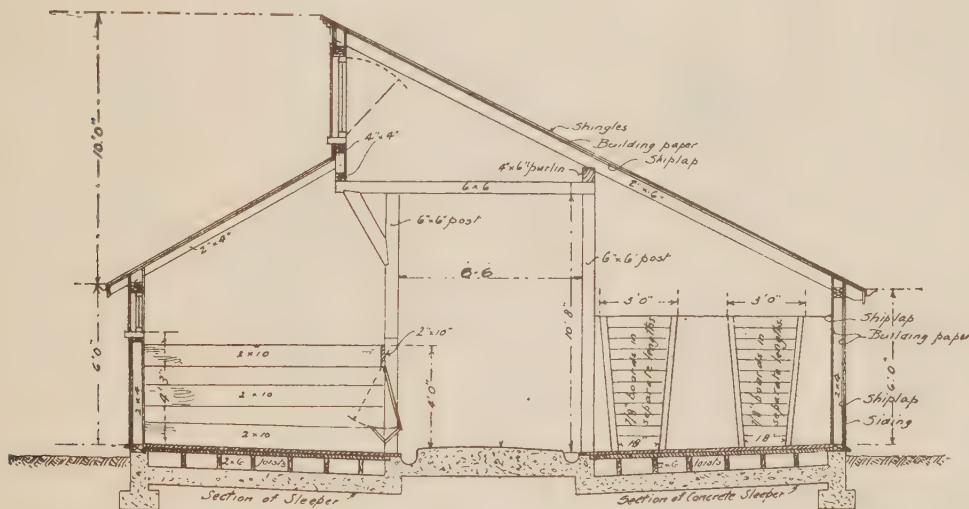


Fig. 20—Cross section of swine palace.

Fig. 20 shows an interior cross section of the same building. It provides for a concrete foundation, with sleepers and floor in the feeding passage. It will be observed that the floor of the pens consist of two courses of tamarac plank with a sheet of rubberoid between them. This arrangement, together with the manner of joining the flooring to the concrete at either end, makes it possible to wash out the pens and feeding passage, thus preventing foul odors from arising, and preserving the piggery in a thoroughly sanitary condition. The use of lumber flooring reduces the danger from rheumatism during the winter months. This danger may be further reduced by building the nesting places two feet above the floor and providing an inclined plane as a means of going up and down after the style of many Ontario piggeries.

It will also be observed that all floors slope toward the gutters, which run the full length of the building and empty through a 4-inch pipe into a cess pool.

In places where the sub-soil is porous and there is no danger of contaminating the water supply, the cess pool may be built as shown in Fig. 20, but where the liquid that accumulates in the cess pool has to be pumped into tanks and drawn away, it will be found better to place the cess pool under the building, making the outside cess pool wall coincide with the foundation instead of the inside wall, as shown in Figs. 19 and 21. This arrangement will tend to protect the cess pool against freezing.

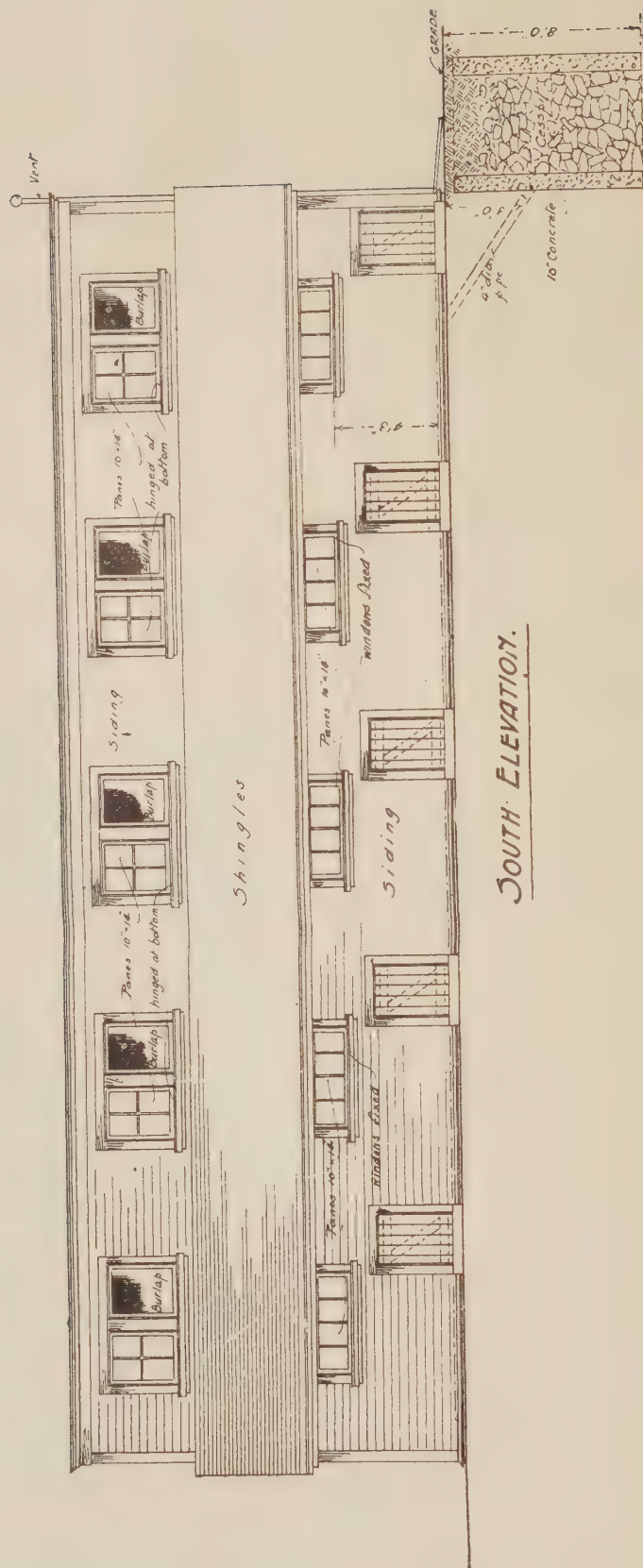


Fig. 21—South elevation of swine palace.

The object of the style of roof shown in Figs. 20 and 21 is to provide a means of admitting the direct rays of the sun into the pens on the north side of the building. In this latitude it is important that this second elevation be placed at least three feet south of the feeding passage, as shown in Fig. 20. It will be observed that practically all the light is admitted on the south side of the building, and that the openings in the north wall have been reduced to a minimum. This is an important point to

observe in the construction of farm buildings in Alberta. It should also be observed in Fig. 21 that permanent ventilation is secured through sheets of burlap placed over frames alongside the windows and are of the same size as the window frames. Provision is made for additional ventilation by opening the windows which are hinged at the bottom, as shown in Figs. 20 and 22, and are operated by means of an iron rod, the same as an ordinary transom. The underside of the rafters should be sealed the same as the inside of the studding, else it will be difficult to maintain the proper temperature during cold weather, and prevent frost from accumulating on the underside of the roof.



Fig. 22—Rear end elevation of swine palace showing vent from the cess pool.

Fig. 22 shows the rear end elevation of the building in which is placed the vent from the cess pool.

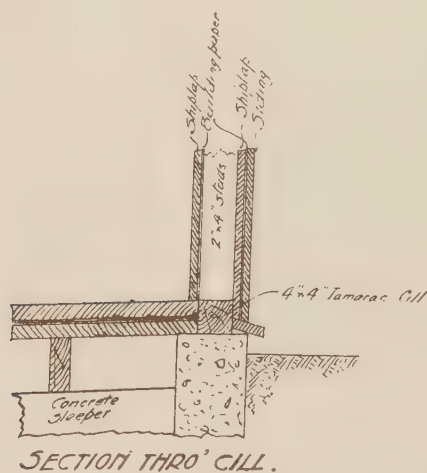


Fig. 23—Cross section of foundation, floor and wall.

Fig 23 shows the framework of the walls.

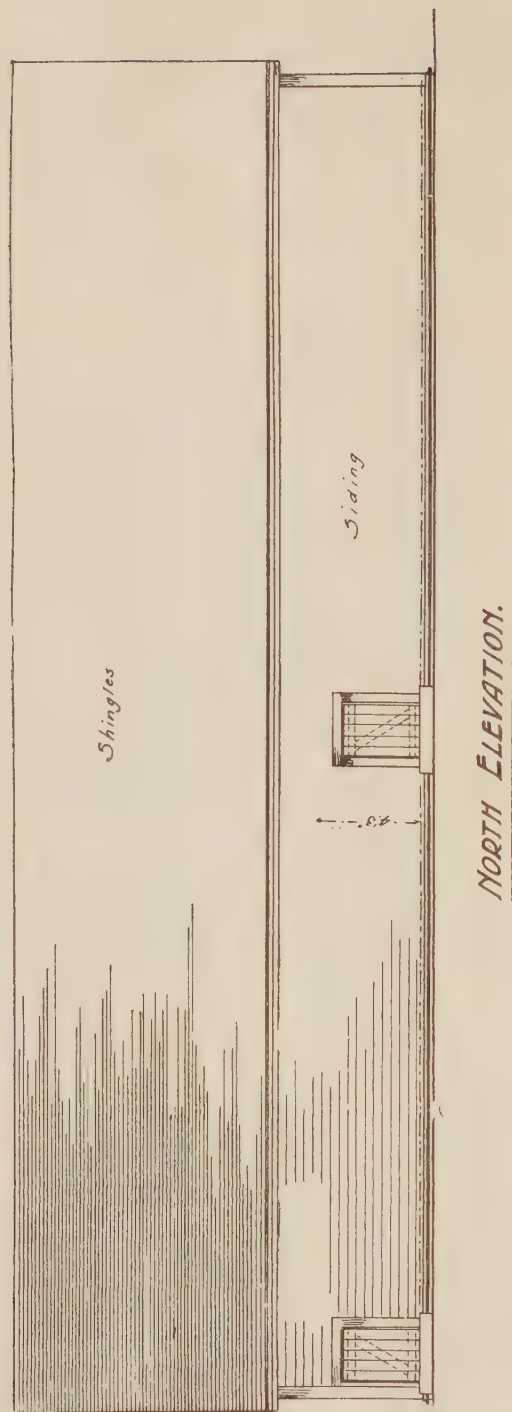


Fig. 24—North elevation of swine palace.

Fig. 24 shows the north side of the piggery. It will be observed that there are but two openings in this wall, namely, those that are made necessary for ingress and egress.

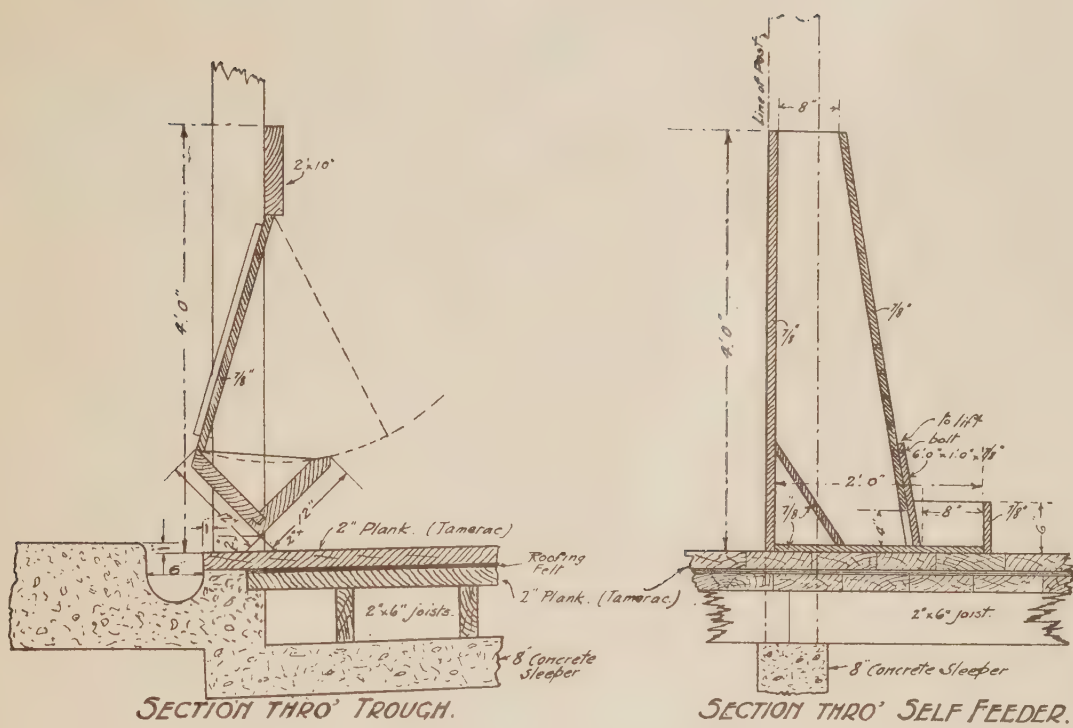
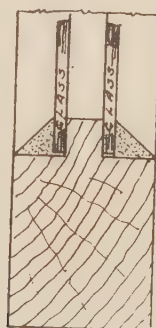


Fig. 25—Cross section of feeding trough, floor and gutter shown to the left, while to the right is a cross section of the self feeder.

On the left hand side of Fig. 25 there is shown the fitting of the floor of the pen into the concrete in order to make the floors waterproof. The setting of the trough 2 inches above the floor is also shown. The object of this arrangement is to facilitate the washing out of the pens and to permit the drainage from the pens to pass freely into the gutters. There is also shown the manner of constructing a hog trough from which the pigs can be excluded while the trough is being cleaned or the feed is being supplied. On the right hand side of Fig. 25, the arrangement of the self feeder is shown. The size of the opening at the bottom is regulated by a sliding door, which is raised or lowered as the nature of the feed requires, and is held in place by means of bolts or pins.



SECTION SHEWING
DOUBLE GLAZING

Fig. 26—Cross section of double glazed window sash.

Fig. 26 shows the provisions for double glazing a single window frame. The dead air space of one-quarter of an inch which this arrangement provides aids materially in preserving the temperature of the piggery during cold weather.

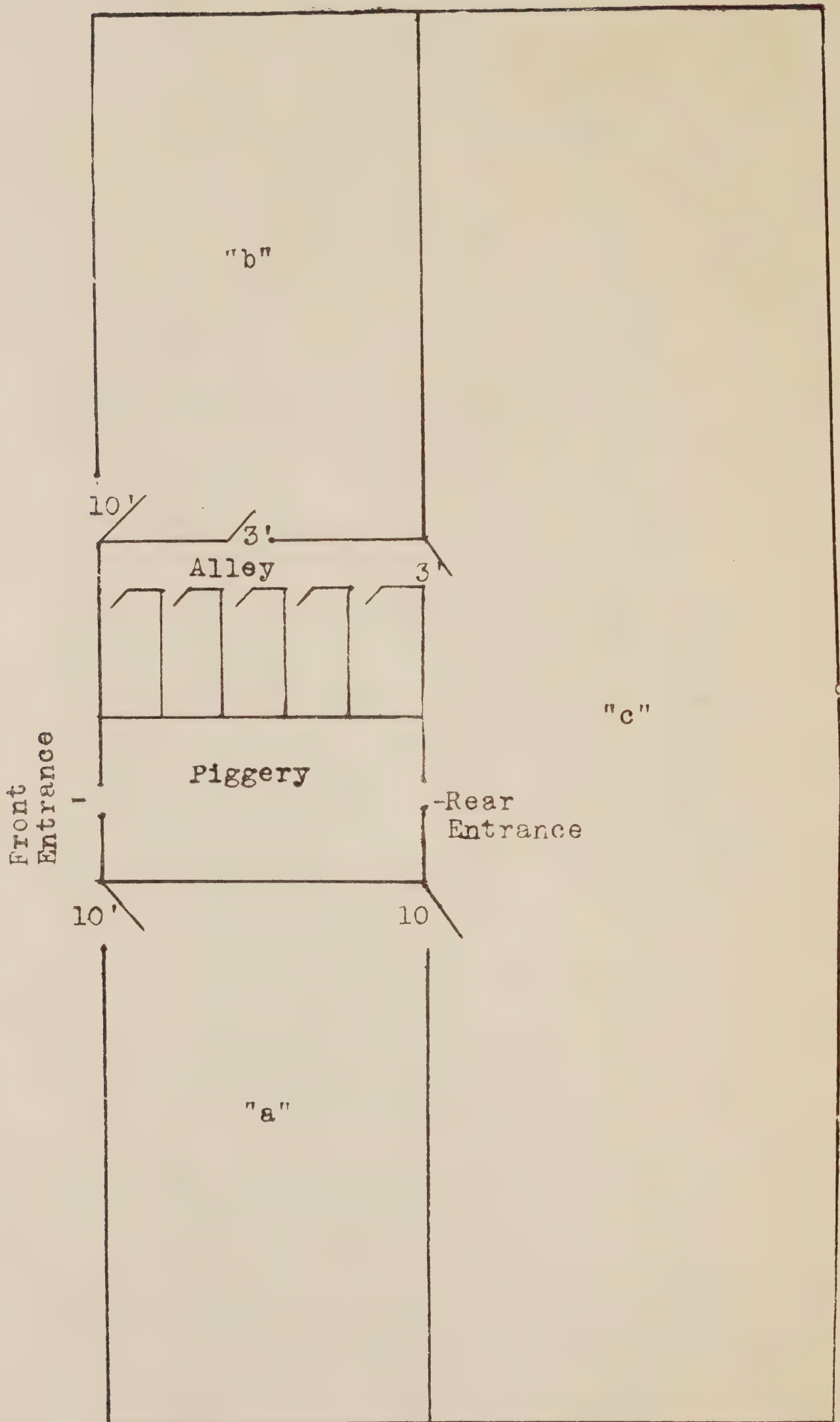


Fig. 27—Arrangement of pasture lots.

PASTURE LOTS

As one or more pasture lots are essential to successful and economical swine growing, a few suggestions regarding the placing of these may not be out of place. In order to be of the greatest value to the swine grower, they should be convenient to and always accessible from the piggery.

Fig. 27 shows a piggery of the dimensions given in Fig. 19, with small run-ways attached to the farrowing pens on the south side, and an alley connecting with these and with the pasture lot "b." On the north there is another pasture lot, which may be used by a number of weanling pigs or fattening hogs. The main and largest feed lot is marked "c." It will be observed that it is accessible to the animals housed in the south side of the pen through the run-way and alley, and to those confined to the north side, through the small doorway shown in Fig. 22.

The kinds of crops to grow as forage for swine in Alberta will be dealt with in a subsequent circular.

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